

TRI-DIMENSIONALITY OF THE "FALSE HEADS" OF LYCAENID HINDWINGS (LEPIDOPTERA: LYCAENIDAE)

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In talking about various forms of mimicry in butterflies, some authors mention eyespots on "less important parts of the body" (Hinton, 1980). A "false head" at the anal angle of Lycaenidae hindwings is very well known, and usually is categorized as a form of "special protective resemblance" (Hinton, 1980). Such "false heads" with "eyes" and "antennae" in hairstreaks are supposed to attract the attention of a predator and to direct its attack toward a less important part of the body (Hinton, 1980; Larsen, 1982; Robbins, 1980, 1985). It is known, that in order to attract the attention of the predator to the "false heads," some butterflies after landing make a 180° turn, and walk backwards several steps, in the direction of the previous flight (Larsen, 1982). Also, the typical "rubbing" movements of the hairstreak hindwings are well known (Robbins, 1980). This should perhaps increase the "vivacity" of the false head, in the eyes of the predator.

In this article, I would like to discuss the possibility, that the "false head" may sometimes also have a "threatening" function, or a repulsive effect. Robbins (1980) noted that already Kirby and Spence (1818), Trimen (1887), and Bell (1906), had suggested that "false head" wing patterns alarm or menace potential predators. This may not be apparent on most of the lateral pictures of butterflies, which make a "two-dimensional" impression upon the viewer; the "false heads" also usually are perceived as flat and two-dimensional. While attempting to photograph *Arawacus* species (Lycaenidae) in November 1989 at Fazenda Rancho Grande, in Rondônia, Brazil, I observed the following interesting phenomenon: three individuals of an *Arawacus* sp. (Lycaenidae) were sitting on the upper surface of a large leaf. When I was approaching them with my large camera lens, possibly a potential predator in their eyes, they suddenly synchronized their movements and position. All three of them turned their "false heads" to the lens, but also periodically opened and closed the tornus of their hindwings, forming in such a way what appeared to be some kind of "false threatening mouth." This behavior made the impression of not only attracting the attention, but clearly posed a possible intimidation to the predator. At that moment I realized what I term the "tri-dimensionality" of the "false heads." Robbins (1980) already mentions that the hindwing anal angle is frequently everted at right angles to the main plane of the wings, so that the "head" has a "3-dimensional" appearance.

Something similar I observed, when I was photographing an ovipositing female of *Strymon acis bartrami* (Comstock & Huntington) on Big Pine Key, Florida, on 31 May, 1998. In the figures, made from the caudal direction (rear of the butterfly), we may see some "devouring" organ, perhaps resembling a mantid's head, or some "trap" (e.g., a carnivorous plant?), or some other "dangerous" organ, possibly functioning as a deterrent. In any case, it seems to deflect the attention of the potential predator from the more important part of the body, like the ovipositing abdomen.



Fig. 1-2. Ovipositing female of *Strymon acis bartrami*, Big Pine Key, Monroe Co., Florida, 31 May 1998, perched on *Croton linearis*: 1) view from the rear showing "false heads" on the hindwings, giving a "tri-dimensional" impression like a devouring or threatening organ with thorns, claws or teeth. 2) Lateral view same individual after oviposition, with egg beneath the left hindleg claw.

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